Agenda

5th International Symposium on Gas Cleaning at High Temperature

September 17-20, 2002

Tuesday, September 17, 2002

6:00 – 8:00 p.m. *Pre-Registration and Reception; Poster Setup for Sessions 1 and 2*

Wednesday, September 18, 2002

7:00 a.m. *Registration/Continental Breakfast*

7:45 a.m. *Speakers Briefing*

8:00 a.m. *Welcome and Introductions*

To Be Determined
U.S. DOE, National Energy Technology Laboratory

To Be Determined
West Virginia University

Plenary Session

8:50 a.m. *Gas Cleaning for Industrial Processes*
Lutz Bergmann, President
Filter Media Consulting, Inc.

9:20 a.m. *Industrial Perspective on Hot Gas Cleanup*
Dale Simbeck
SFA Pacific, Inc.

9:50 a.m. *Break*

10:10 a.m. *EPA Perspective on Control of Criteria Pollutants*
John Bachmann
U.S. Environmental Protection Agency

10:40 a.m. *Gas Cleaning for Electric Utilities*
Randall Rush
Southern Company Services

11:10 a.m. *Plenary Panel Discussion*

12:15 p.m. *Lunch*

Session 1. Particulate Cleanup Applications

Session Chairs: Howard Hendrix, Southern Company Services, USA
Juhani Issakson, Kvaerner Pulping, Finland

1:30 p.m. 1.1 *Dry Gas Filtration Experience on a Ferro Alloy Blast Furnace*
Hugues Vincent
Mikropul France SAS, France

1.2 *High Temperature Flue Gas Cleaning System for 15 MWe PFBC-CC Station in China*
Shi Mingxian
University of Petroleum, P. R. China

1.3 *Hot Gas Filter for MSW Incineration Plant*
Tomonori Aso
Takuma Company, Ltd., Japan

1.4 *Hot-Gas Filter Testing with a Transport Reactor Gasifier*
Michael Swanson
University of North Dakota, USA

1.5 *Power Systems Development Facility: High-Temperature, High Pressure Filtration in Gasification Operation*
Ruth Ann Martin
Southern Company Services, Inc., USA

1.6 *Hot Gas Particulate Cleaning Technology Applied for PFBC / IGCC Condition C Ceramic Tube Filter (CTF) and Metal Filter*
Hiroshi Sasatsu
Electric Power Development Co., LTD., Japan

1.7 *Development and Testing of Moving Granular Bed Filter in Taiwan Industrial Technology Research Institute*
Ching-Yu Peng
Energy & Resources Laboratories, Industrial Technology Research Institute, Taiwan

1.8 *SCHUMACHER Hot Gas Filter Long-Term Operating Experience in the NUON POWER Buggenum IGCC Power Plant*
Bernd Scheibner
USF SCHUMACHER Umwelt- und Trenntechnik GmbH, Germany

1.9 *Operational Data on High Temperature Gas-Solid Particulate Filtration*
Vijay Shroff
Procedyne Corporation, USA

1.10 *Operation Behavior of a Multi-Candle Filter with Coupled Pressure Pulse Recleaning during Normal Operation and in the Case of a Filter Candle Failure*
Robert Mai
Forschungszentrum Karlsruhe GmbH, Institut fhr Technische Chemie, Germany

1.11 *Experiences of the Application of Hot Gas Filtration to Industrial Processes*
Brian Thomas Lloyd
Tenmat Limited, United Kingdom

1.12 *Pulse Jet Cleaning System Retrofit Achieves Low Emission Levels In High-Temperature Abrasive Industrial Application*
Kenneth Johnson
Goyen Controls Company, USA

1.13 *Flue Gas Cleanup at Temperatures about 1400°C for a Coal Fired Combined Cycle Power Plant: State and Perspectives in the Pressurized Pulverized Coal Combustion (PPCC) Project*
Malte E.C. F`rster
University of Duesseldorf, Germany

2:45 p.m. *Break*

Session 2. Bed Filters and Safeguard Devices

Session Chairs: John Hurley, Energy & Environmental Research Center, USA
Chikao Kanaoka, Kanazawa University, Japan

3:05 p.m. 2.1 *Preparation of Metal Filter Element for Fail Safety in IGCC Filter Unit*
Joo-Hong Choi
Gyoungsang National University, Korea

2.2 *A Reliable New Check Valve for Harsh Gas Processing Applications*
Todd Snyder
Southern Research Institute, USA

2.3 *Improving Efficiency of a Counter-Current Flow Moving Bed Granular Filter*
Gerald Colver
Iowa State University, USA

2.4 *Ceramic Hot Gas Filter with Integrated Failsafe System*
Steffen Heidenreich
USF SCHUMACHER Umwelt- und Trenntechnik GmbH, Germany

2.5 *Development of a Candle Filter Failure Safeguard Device*
Zal Sanjana
Siemens Westinghouse Power Corporation, USA

2.6 *Estimation of Collection Efficiency Change of Moving Granular Bed Filter by Dust Load*
Chikao Kanaoka
Kanazawa University, Japan

2.7 *The Experimental Study on the Moving Granular Bed Filter for Hot Gas Cleanup in IGCC System*
Shisen Xu
Thermal Power Research Institute of State Power Corporation of China, P.R. China

2.8 *A Simple Candle Filter Safeguard Device*
John Hurley
Energy & Environmental Research Center, USA

2.9 *Novel Backup Filter Device for Candle Filters*
Bruce Bishop
CeraMem Corporation, USA

4:00 p.m. *Poster Review*

5:30 p.m. *Poster Setup for Sessions 3, 4, 5, and 6*

6:30 p.m. *Reception at the West Virginia University Erickson Alumni Center*

Thursday, September 19, 2002

7:30 a.m. *Continental Breakfast*

8:00 a.m. *Speakers Briefing*

8:15 a.m. *Welcome Back*

Session 3. Particulate Cleanup Fundamentals

Session Chairs: Gerhard Kasper, University of Karlsruhe, Germany
Vann Bush, Southern Research Institute, USA

8:30 a.m. 3.1 *Flow Characteristics of Pulse Cleaning System in Ceramic Filter*
Zhongli Ji
University of Petroleum, P.R. China

3.11 *Analysis of High Temperature Adhesion Behavior of Fly Ash from Coal and RDF Combustion by Using FE-SEM with Heat Treatment Unit*
Hidehiro Kamiya
Tokyo University of Agriculture & Technology, Japan

3.12 *A High Temperature Test Facility for Studying Ash Particle Distribution Characteristics of a Candle Filter During Surface Regeneration*
B.S.-J. Kang
West Virginia University, USA

3.13 *A Study on Ash Particle Distribution Characteristics of Candle Filter Surface Regeneration at Room Temperature*
B.S.-J. Kang
West Virginia University, USA

3.14 *Computer Modeling of Flow, Thermal Condition and Ash Deposition in a Hot-Gas Filtration Device*
Goodarz Ahmadi
Clarkson University, USA

3.15 *Experimental Measurements of the Permeability of Ceramic Barrier Filters Used in Conjunction with a Fast Network Flow Model to Calculate the Gas Flows in Hot Gas Filters*
John VanOsdol
U.S. DOE, National Energy Technology Laboratory, USA

9:50 a.m. *Break*

Session 4. Filter Materials and Performance

Session Chairs: Mary Ann Alvin, Siemens Westinghouse Power Corporation, USA
Astrid Walch, USF SCHUMACHER Umwelt- und Trenntechnik GmbH, Germany

10:10 a.m. 4.1 *Assessment of Metal Media Filters for Advanced Coal-Based Power Generation Applications*
Mary Anne Alvin
Siemens Westinghouse Power Corporation, USA

4.2 *Examinations of Chemical Resistance and Thermal Behaviour of Ceramic Filter Materials for Hot-Gas Cleaning*
Jens Angermann
TU Bergakademie Freiberg

4.3 *Characterization of Field-Exposed Iron Aluminide Hot Gas Filters*
Peter Tortorelli
Oak Ridge National Laboratory, USA

4.4 *Characterization of Filter Elements for Service in a Coal Gasification Environment*
Jack Spain
Southern Research Institute, USA

4.5 *Vibrational Behaviour of Ceramic Hot Gas Filter Elements: Analysis and Characterisation of Mechanical Properties*
Ralf Westerheide
Fraunhofer-Institut fur Werkstoffmechanik, Germany

4.6 *Evaluation of Mechanical Properties and Structural Changes of Ceramic Filter Materials for Hot Gas Cleaning under Simulated Process Conditions*
Ralf Westerheide
Fraunhofer-Institut fur Werkstoffmechanik, Germany

4.7 *Nondestructive Evaluation of Stiffness and Stresses of Ceramic Candle Filters at Elevated Temperature under Vibrational Environment*
Roger H.L. Chen
West Virginia University, USA

4.8 *Microstructure and Fracture of Some SiC-Based Clay Bonded Hot Gas Filter Materials After Exposure to Thermal Cycling and/or High Temperature Water Vapour*
Pirjo Pastila
Tampere University of Technology, Finland

4.9 *Development of Metallic Filters for Hot Gas Cleanup in Pressurized Fluidized Bed Combustion Applications*
Iver Anderson
Ames Laboratory, Iowa State University, USA

4.10 *Automated Nondestructive Evaluation Method for Characterizing Ceramic and Metallic Media Hot Gas Filters*
William Ellingson
Argonne National Laboratory, USA

11:15 a.m. *Poster Review and Lunch*

Session 5. Catalytic Filters

Session Chairs: Georg Schaub, Universit@t Karlsruhe, Germany
David Berry, U.S. DOE, National Energy Technology Laboratory, USA

1:30 p.m. 5.1 *New Technology for Simultaneous Removal of Gaseous and Particulate Components from Hot Exhaust Streams*
Alexandre Dolidovich
A.V. Luikov Heat and Mass Transfer Institute, Belarus

5.2 *Reduction of Ammonia and Tar in Pressurized Biomass Gasification*
Wuyin Wang
Lund University, Sweden

5.3 *Improvement of Sulphur Resistance of a Nickel-modified Catalytic Filter for Tar Removal from Biomass Gasification Gas*
Karen Engelen
Vrije Universiteit, Belgium

5.4 *Carbon Particulate Filtration and Catalytic Abatement from Stationary Industrial Sources*
Vito Specchia
Dipartimento di Scienza dei Materiali ed Ingegneria, Italy

5.5 *Catalysis of Reduction and Oxidation Reactions for Application in Gas Particle Filters*
Georg Schaub
Engler-Bunte Institut, Universit@t Karlsruhe, Germany

5.6 *Catalytic Cracking of Gaseous Heavy Hydrocarbons by Ceramic Filters*
Steffen Heidenreich
USF SCHUMACHER Umwelt- und Trenntechnik GmbH, Germany

5.7 *Experimental and Numerical Investigations on Flue Gas Purification During Hot Gas Filtration*
Christian Thulfaut
Aachen University of Technology, Germany

5.8 *Simultaneous Removal of Particulates and NO_x Using Catalyst Impregnated Fibrous Ceramic Filters*
Jong-In Choi
Ajou University, Korea

2:30 p.m. *Break*

Session 6. Sorbent Development for H_2S Removal

Session Chairs: Ranjani Siriwardane, U.S. DOE, National Energy Technology Laboratory, USA
Javad Abbasian, Illinois Institute of Technology, USA

2:45 p.m. 6.1 *Stability of Sulfur Capacity Attributed to Zinc Sulfidation on Sorbent Containing Zinc Ferrite – Silica Composite Powder in Pressurized Coal Gas*
Makoto Kobayashi
CRIEPI, Japan

6.2 *Highly Attrition Resistant Zinc Oxide-Based Sorbents for H_2S Removal by Spray Drying Technique*
Chong Kul Ryu
Korea Electric Power Research Institute, Korea

6.3 *Continuous Operation of Spray-Dried Zinc Based Sorbent in a Hot Gas Desulfurization Process Consisting of a Transport Desulfurizer and a Fluidized Regenerator*
Chang-Keun Yi
Korea Institute of Energy Research, Korea

6.4 *Regeneration and Durability of Advanced Zinc Ferrite Sorbent for Hot Coal Gas Desulfurization*
Hiromi Shirai
Central Research Institute of Electric Power Industry, Japan

6.5 *A Reusable Calcium-Based Sorbent for Desulfurizing Hot Coal Gas*
Thomas Wheelock
Iowa State University, USA

6.6 *Durable Zinc Oxide-Based Regenerable Sorbents for Desulfurization of Syngas in a Fixed-Bed Reactor*
Ranjani Siriwardane
U.S. DOE, National Energy Technology Laboratory, USA

6.7 *Influence of Dust on High Temperature Desulfurization of Iron Oxide Sorbent*
Jiejie Huang
Institute of Coal Chemistry, Chinese Academy of Sciences, P.R. China

6.8 *Mathematical Simulation of a Bench Scale BFB Reactor for Cleaning Synthesis Gas at High Temperature and Pressure*
José Francisco Perales Lorente
ETSEIB, Spain

6.9 *Effect of Additive on Iron Oxide Sorbent in High-Temperature Coal Gas Desulfurization*
Chunhu Li
Taiyuan University of Technology, P.R. China

6.10 *New ZnO-Based Regenerable Sulfur Sorbents for Fluid-Bed/Transport Reactor Applications*
Rachid Slimane
Gas Technology Institute, USA

6.11 *Testing of Regenerable Iron-Calcium Oxides Desulfurization Sorbents in a Fixed-Bed Reactor*
Yanxu Li
Taiyuan University of Technology, P.R. China

4:00 p.m. *Poster Review*

5:30 p.m. *Poster Setup for Sessions 7 and 8*

7:00 p.m. *Social and Dinner at the Historic Clarion Hotel Morgan*

Friday, September 20, 2002

7:30 a.m. *Continental Breakfast*

8:00 a.m. *Speakers Briefing*

8:15 a.m. *Welcome Back*

Session 7. Sorbents for Removal of Other Contaminants

Session Chairs: Raghubir Gupta, Research Triangle Institute, USA
Ron Schulz, University of Surrey, UK

8:30 a.m. 7.1 *Moisture Effects on the Phenanthrene Adsorption Capacity by Carbon Materials at High Temperature*
Ana Mastral
Instituto de Carboquimica, Spain

7.2 *Three-Ring-Polycyclic Aromatic Hydrocarbons Removal from Waste Hot Gas by Sorbents: Influence of the Sorbent Characteristics*
Ana Mastral
Instituto de Carboquimica, Spain

7.3 *Studies of Alkali Sorption Kinetics for Pressurized Fluidized Bed Combustion by High Pressure Mass Spectrometry*
Karl-Josef Wolf
Research Center Juelich, IWV-2, Germany

7.4 *Thermodynamic Properties of Alkali Species in Coal Fired Combined Cycle Power Systems*
Winfried Willenborg
Research Center Juelich, IWV-2, Germany

7.5 *Acid Gas Removal By Customary Sorbents for Integrated Gasification Fuel Cell Systems*
Jochen Kapfenberger
Fraunhofer UMSICHT, Germany

7.6 *High Temperature Flue Gas Desulfurization in Moving Beds with Regenerable Copper Based Sorbents*
Javad Abbasian
Illinois Institute of Technology, USA

7.7 *Sorbents for High Temperature Removal of Arsenic from Gasified Coal*
Gokhan Alptekin
TDA Research, Inc., USA

7.8 *Mercury Sorbents for Flue Gas and Fuel Gas Applications*
Evan Granite
U.S. DOE, National Energy Technology Laboratory, USA

7.9 *In Situ Gas Conditioning in Fuel Reforming for Hydrogen Generation*
Andreas Bandi
Center for Solar Energy and Hydrogen Research, ZSW, Germany

9:30 a.m. *Break*

Session 8. Gaseous Pollutants

Session Chairs: Suresh Jain, U.S. DOE, National Energy Technology Laboratory, USA
Richard Newby, Siemens Westinghouse Power Corporation, USA

10:00 a.m. 8.1 *Development of the Ultra-Clean Dry Cleanup Process for Coal-Based Syngases*
Richard Newby
Siemens Westinghouse Power Corporation, USA

8.2 *Development of a Liquid Metal Based Fuel Gas Scrubbing System*
Boon Fuei Chang
Sheffield University, Waste Incineration Centre, England

8.3 *Removal of Particles and Acid Gases (SO2 or HCl) with a Ceramic Filter by Addition of Dry Sorbents*
Georg Schaub
Universit@t Karlsruhe, Germany

8.4 *Study of Separation Property of Heavy Metal Compounds by Hot Gas Cleaning System*
Chikao Kanaoka
Kanazawa University, Japan

8.5 *Incineration of Waste Containing Chlorine: Catalytic Hot Flue Gas Cleaning with Total Oxidation Catalysts*
José Corella
University Complutense of Madrid, Spain

8.6 *Potential Application of High Temperature Gas Cleaning in Metallurgical Processes*
Jesse White
MEFOS, Sweden

8.7 *A Hybrid Gas Cleaning Process for Production of Ultraclean Syngas*
Timothy C. Merkel
RTI, USA

8.8 *Design and Control of Hot-Gas Desulfurization Systems with High Oxygen Regenerator Feed Gas*
Chang-Keun Yi
Korea Institute of Energy Research, Korea

8.9 *Electrochemical Membrane Separation of Hydrogen Sulfide from Coal Gasification Streams*
A. Alan Burke
Georgia Institute of Technology, USA

8.10 *NETL=s Gas Process Development Unit for Hot/Warm Gas Cleanup*
Elaine Everitt
U.S. DOE, National Energy Technology Laboratory, USA

11:15 a.m. *Poster Review and Lunch*

1:45 p.m. *Adjourn / Optional Tour of NETL*